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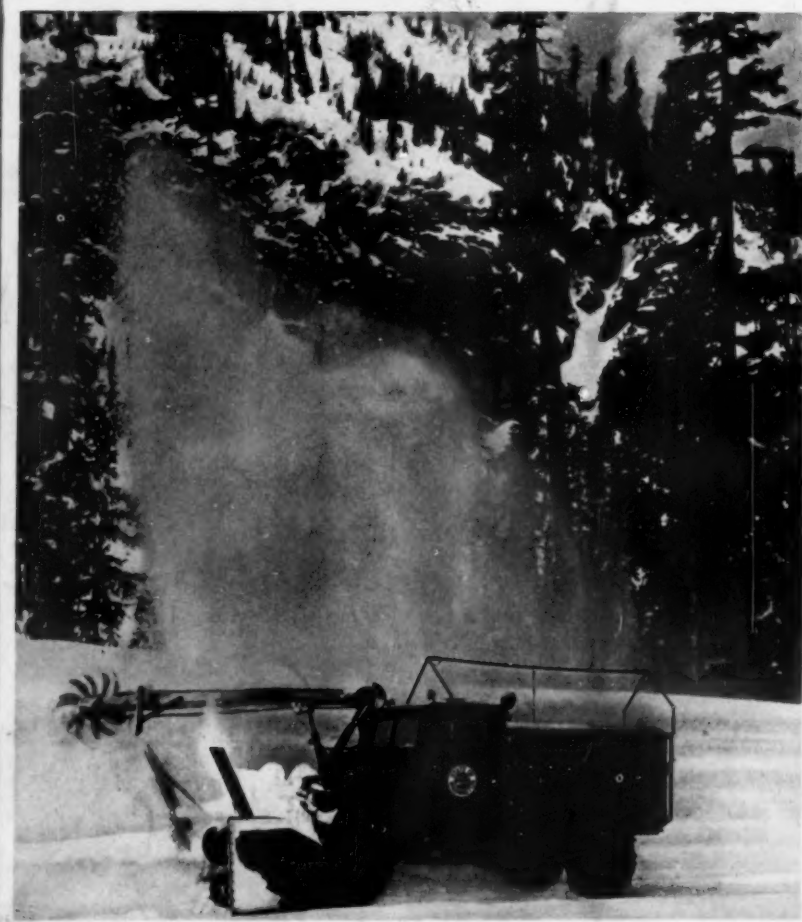
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JAN 15 1938

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



January 15, 1938

Radio Snow Plow

See Page 47

A SCIENCE SERVICE PUBLICATION

Do You Know?

Mahogany is being bleached to a cream color, to meet a vogue for light colored woods in furniture.

Because a milk goat eats less than a cow, and produces enough milk for a small family, one scientist calls the goat "a handy pocket edition of the cow."

Male song sparrows with brighter feathers or stronger singing voices have no better success in winning mates than less personable birds, so far as one naturalist has observed.

Over 16,000 bulbs of a fragrant blue lily called "Glory of the Sun" have been brought from Chile to the University of California, to introduce this plant to American gardens.

What workmen should do if their shovels strike the scientific treasure of some fossil bird or beast is explained in a guide for paleontologists soon to be published by the University of California.

The Indian village of Metakatla, Alaska, remained independent of relief during depression years, and has a remarkable record of community ownership of its salmon cannery, sawmill and other economic ventures.

The trained eye of an archaeologist can locate some types of Indian village by the clue of dark circles in the soil—these mark the fireplaces in the middle of huts where ashes accumulated and discolored the earth.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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PUBLIC HEALTH

Is the epidemic that killed Chicago babies known elsewhere? page 41.

VOLCANOLOGY

Why does Japan have so many active volcanoes? page 40.

Sunflower oil is being used in soap-making in Hungary.

A new German device reproduces sound immediately after recording, at a comparatively low cost.

One modern machine for making electric lamp bulbs can turn out half a million bulbs a day—the work of 500 glass blowers.

Shark oil is found useful in Japan as a lubricant in airplane motors.

Birds, particularly starlings, are suspected of having brought foot-and-mouth disease into England.

A lonesome baboon in the New York Zoological Park has been happier since a white rabbit was given it for a companion.

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BIOLOGY

Artificial Creation of Life May Come From Virus Study

Research Leads to Finding That Treatment Renders Virus Inactive; May Throw Light on Protoplasm

PRODUCTION of life in the laboratory, the dream of modern biologists as the making of gold was the dream of medieval alchemists, may hinge on better understanding of disease viruses like those of smallpox, tobacco mosaic, and hog cholera.

"If we are ever able to synthesize virus proteins in the absence of living cells, then we shall have gone a long way towards the synthesis of protoplasm," declared Dr. W. M. Stanley of the Rockefeller Institute for Medical Research, Princeton, N. J., before a meeting of naturalists in connection with the A.A.A.S. meeting at Indianapolis.

But before that can happen, biologists must first find out how the virus molecules synthesize themselves. These protein units, relatively enormous as molecules go, can invade a cell, take parts of its life-materials, and build up other molecules like themselves. A few of them, introduced into plant or animal, multiply to millions and make the host organism sick unto death.

As yet nobody knows how they do it. Dr. Stanley suggested a possible analogy, in the case of certain complex inorganic compounds capable of forming crystals, yet which do not form them until they are "seeded" with tiny crystals that serve as "patterns" for the process. Perhaps the invading virus molecules serve as patterns in a similar but much more complex process.

Beginning or End

Although the virus molecules are now well established as non-living things, possessed of certain very lifelike characteristics, it is not necessary to look upon them as the lowest beginnings of what might possibly turn into life—as a sort of pre-living or proto-living condition of matter. They may even represent the last stages in the reverse process; may be the ultimate degeneration of life.

When an organism takes to a parasitic mode of living it loses things that it once needed in independent life. Parasitic plants lose their leaves, parasitic insects their wings. The most advanced stage of parasitism in larger organisms comes

when all that is left of the organism consists of a set of organs to feed with and a set to breed with. There are some worms like that—the tapeworm, for example.

Dr. Stanley suggested, on the basis of a discussion by a fellow-scientist, that we might think of a one-celled parasite invading the cells of a host plant or animal. It would first lose its cytoplasm, passing on to its host the jobs taken care of by that part of the cell.

Then the nuclear organization might go, finally leaving only large, complex molecules of nucleo-proteins capable of taking material from the host and using it in self-multiplication. That last stage is about a picture of what disease virus molecules now are. They may thus be either at the bottom of life on the way up, or at the top of non-life on the way down.

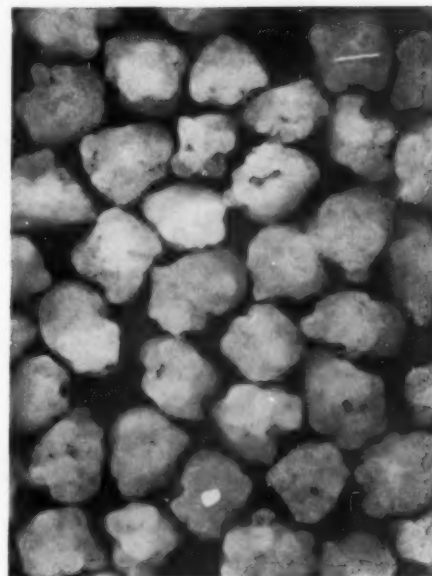
Protection Against Virus?

Hope that men and animals will be protected against the virus diseases, among them encephalitis, infantile paralysis, parrot fever, yellow fever, and certain kinds of cancer, was expressed by Dr. Stanley in another paper.

Dr. Stanley has now extended his pioneer work demonstrating the protein nature of the cause of so-called virus diseases, with two important results:

1. Proteins obtained from virus or mosaic diseases of plants, when treated with hydrogen peroxide, formaldehyde, nitrous acid or ultraviolet light, become inactive. Although slightly altered chemically, they still retain certain chemical and serological properties characteristic of the virus protein. If similar results with viruses affecting man and animals can be obtained, there may be produced material useful in the protection or immunization against such diseases.

2. Intermediate in size and properties between living organisms and non-living molecules, the protein may represent "a type of entity hitherto unrecognized." This means that a new class of matter, neither living nor non-living, may be discovered. Because the protein has the ability to reproduce itself under certain



X-RAYS INSPECT

It is no longer necessary to bite into a piece of candy to discover a bit of metal that may have been enclosed by mistake. X-ray inspection is used by some candy manufacturers to detect foreign matter, as in this X-ray picture. Notice the white marks portraying unwanted particles in the candy at top right and at the bottom.

conditions, the understanding of this mechanism may throw light upon the way in which protoplasm, the stuff of life, grows.

Dr. Stanley in his paper before the scientists explained that the tobacco mosaic virus, upon which he has done the most work, is intermediate in size between ordinary molecules and living organisms. It possesses some properties characteristic of molecules and some like those of living things.

To biologists one of the most interesting things about the disease-causing protein-virus is its ability to change into other strains, that is, to mutate as the geneticist says. When the change of strain takes place, the protein of the new strain is different from that of the old virus protein.

Science News Letter, January 15, 1938

PHARMACY

Coal Tar Yields Narcotic That Rivals Codeine

A NEW pain-killing drug that can be created synthetically from coal tar was reported by Prof. Erich Mosettig of the University of Virginia before the 7th National Organic Chemistry Symposium.

The synthetic drug equals codeine in narcotic effectiveness. Codeine, like mor-

phine, comes from the opium of the poppy flower.

If the persistence of war in the Far East should ultimately interfere with the world's supply of opium for medicinal purposes, it now appears that physicians will not lack for a pain-relieving substitute that can be made in the laboratories of the chemist, from materials that are readily available.

Dr. Mosettig and his co-workers at the University of Virginia are part of a group of medical scientists who are tackling that vastly vital problem of finding an effective pain-killing narcotic that will not be habit-forming. Their work and their goal is the chemists' contribution toward ridding the world of the menace of narcotic drug addiction.

The research is under the guidance of the National Research Council, the

U. S. Public Health Service and the Narcotic Bureau of the U. S. Treasury Department.

The drug described by Dr. Mosettig has so far only been tried on experimental laboratory animals. Whether or not it has addiction or habit-forming properties is not yet known and will not be until it is tried out on humans.

Codeine, which the new drug seems to resemble more closely than it does morphine, is less habit forming than morphine. This property of codeine is partly due to its chemical composition and partly because it is more readily soluble than is morphine. Much larger doses of codeine, therefore, must be taken to get the physiological and mental "kick" attained by morphine addicts. All this means that codeine is less desirable from the addict's point of view.

Science News Letter, January 15, 1938

MEDICINE

Nasal Spraying Seems Best Hope of Preventing Polio

Not Completely Successful at Present, It May Be When Details Are Perfected; Should Lose Smell Sense

NEW research which gives a clue to the mechanism that gives immunity to infantile paralysis and seems to show that spraying of the nose with chemical or other germ-fighting agents will eventually prove the means of preventing this crippling malady was reported at the meetings of the Society of American Bacteriologists.

In actual practice with children, the method has so far not been anything like 100 per cent. successful. But from reports presented, it appears that the method is fundamentally sound and that success is only a matter of perfecting details, such as finding the best substance to spray and the surest way of getting the spray onto the strategic area.

The lining of the nose appears to be the key to the situation. Not only does the virus of the disease enter the body through this lining, but resistance to the virus develops naturally in this lining. This last important point appears from research reported by Drs. Albert B. Sabin and Peter K. Olitsky of the Rockefeller Institute for Medical Research.

They found that when a monkey becomes immune to the disease, as a result of having had one attack, the cells of the membranes that line his nose have anti-

bodies—germ-fighters—that can dispose of the infantile paralysis virus and prevent its getting at the nerves to destroy them and cause paralysis of muscles.

Nasal sprays have been used heretofore with the idea that they could block the passage of the virus by sealing up the membranes. Drs. Sabin and Olitsky investigated this point also, but so far have been unable to discover whether this actually is the case, or whether the chemical of the spray exerts its protective action in some other way.

Of all the chemicals they tested, zinc sulfate was the most effective for protecting monkeys against the disease.

Loss of Smell Important

Loss of the sense of smell after the nose has been sprayed with zinc sulfate is a sign that the spraying has been done thoroughly enough to protect the child or adult against infantile paralysis, Dr. E. W. Schultz of Stanford University pointed out.

Dr. Schultz is leader of one of the research teams that found zinc sulfate nasal sprays effective in protecting monkeys against the disease.

Reason for the failure of the spray to give children as much protection as

it does monkeys is because the spraying was not done thoroughly enough, Dr. Schultz believes. The virus which causes infantile paralysis gets into the body through the tiny hair-like endings of the nerve of smell. When these nerve endings are destroyed by chemicals, the virus apparently cannot get through. Destruction of the nerve endings can be detected by testing the sense of smell. When it is lost—scientists call the condition anosmia—Dr. Schultz believes it is a sign that the child is protected against the disease. The loss is only temporary, as the nerve endings regenerate. In children the loss of sense of smell following chemical spraying may last only 3 or 4 days, and in adults it may be lost for a few months. When the sense of smell returns, it is time to spray again, if infantile paralysis is still prevalent in the neighborhood.

Vaccination will not protect against infantile paralysis, Dr. Schultz reported, because vaccination is only effective against germs that get into the blood. The infantile paralysis virus which travels nerve routes rather than the blood route must be fought by chemicals that will strengthen nerve resistance. So far, no way of doing this other than by chemical blockade of the nerve endings with a spray is known.

Science News Letter, January 15, 1938

CHEMISTRY

Spray Drying Produces Tiny Bubbles of Milk

THE NEW methods of spray drying, which is used for milk, eggs, soap, potato flour or blood, were described at the 4th Chemical Engineering Symposium held at the University of Pennsylvania.

If you have ever used any of these dried products you may have noticed that they may come in the form of tiny, dried bubbles which are light and hollow inside. It is spray drying which produces this unusual form. Additional solubility attained when one wants to put the dried product back into an edible or usable form is a merit of the method.

Ben B. Fogler and Robert V. Kleinschmidt of Arthur D. Little, Inc., described new techniques. It takes only from 15 to 30 seconds for little liquid bubbles of the material to be dried into hollow spheres, they indicated. Great towers, sometimes two stories high, are employed. The sprayed solution comes in the top of the tower and drops by gravity during the drying.

Science News Letter, January 15, 1938

AGRICULTURE

Super-Normal Granary Is Urged at Science Meeting

Store of Food, of Value Comparable to Gold Reserve, Could Be Preserved for Time of Drought or War

AN IMMENSE store of food, rivaling the nation's buried gold reserves in value, is advocated for America as a super-normal granary for use in emergencies of drought, war or other disaster.

Going Secretary of Agriculture Wallace's ever-normal granary one better, this gigantic national food reserve is declared to be perfectly practical from a scientific standpoint.

Prof. R. B. Harvey of the University of Minnesota is the proponent of a food hoard to be held in long-time storage. He suggests that it would be more logical to have a food reserve that could feed the nation in an emergency than it is to have a gold reserve that has very little practical value.

The government could well spend as much as twelve billion dollars for plant and animal products that could be held in reserve for decades, not mere years, Prof. Harvey argues. Since he is one of the leading plant physiologists of the nation and the originator of chemical methods of blanching and ripening fruits and vegetables, his technical knowledge gives the long-time storage suggestion support.

"It is best not to plow under cotton or corn, not to decrease farm production by allowing weeds to grow on arable land and pay for it, but to get the best

production of the crop best adapted to the soil and store the excess as a national reserve," Prof. Harvey declared.

"We do not know how soon we may be in need of such reserves to release man power. We need to learn how to distribute and conserve maximum production, rather than how to restrict production to a minimum."

Prof. Harvey is confident that physiologists, chemists, pathologists, entomologists and other specialists can work out large-scale methods of storage so that food can be kept fresh and edible over long periods. Wheat, for instance, is known to be good to eat after fifty years. Meats, fats and carbohydrates when properly prepared can be stored almost indefinitely.

Champion long-time storage record was the storing by nature of the flesh of mastodons in Siberian ice for tens of thousands of years. Steaks of this ancient meat were actually served to the Russian Academy of Sciences as a demonstration of its edibility after storage since the glacial epoch.

Such extremes in the holding of food stores are not contemplated by Prof. Harvey but he does suggest investigating whether the Antarctic and other natural ice refrigerator regions may not be well adapted as places of storage. The use

of great storage vaults underground where the temperature could be kept uniform is another possibility.

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GEOLOGY

Runaway Glacier Caused By Friction and Skidding

FRICTION and skidding, not excessive local snowfall, cause Alaska's Black Rapids Glacier to go on periodic rampages, according to evidence recently brought from the northland by Fred H. Moffit, of the U. S. Geological Survey.

Suddenly increased snowfall in the Black Rapids region, formerly believed to be the cause of the mile-a-month extension of the ice field last year, is now ruled out. If the snowfall increased, every glacier in the area should run away. Only Black Rapids Glacier advanced rapidly.

Friction, Mr. Moffit indicated, allows the accumulated snow in the gathering basin of the glacier to accumulate for a long time behind the narrow outlet, until it reaches a great thickness. Then,

RUNAWAY GLACIER

Alaska's Black Rapids, the ice mass at center of the picture, advances as much as 115 feet a day. Since first seen thirty years ago, when it was out of sight in the narrow valley to the left, the grinding ice has crept forward, now threatening to invade the river valley in the foreground. Friction in the narrow outlet allows ice to pile up in the wide valley above. Then the weight of ice forces the accumulation out, causing a very rapid advance. This photograph was taken by United States Geological Survey engineers during a study of the mysterious ice field.



the pressure of the ice becomes great, and the ice rushes out, flowing at a measured rate of more than 115 feet a day. This continues until the accumulated excess of ice has run out of the basin.

After an "escape" of excess ice, the glacier behaves normally for some years until another great accumulation occurs.

Science News Letter, January 15, 1938

PHYSICS

Thermal Microscope Shows Crystal Formation at 3632° F.

S EARCH for synthetic abrasives rivaling the diamond in hardness has led to the development of a new "thermal microscope" which makes possible the observation of crystal formation and change even at high temperatures of as much as 3,632 degrees Fahrenheit.

This new tool of science was disclosed in an address by Dr. Frank J. Tone, president of the Carborundum Company, Niagara Falls, N. Y., as he accepted the prized Perkin Medal for 1938. The Perkin Medal is awarded annually by the American Section of the Society of Chemical Industry, an international chemical organization.

The diamond, said Dr. Tone, still stands as the peer of all abrasives despite various reports from time to time that some synthetic material is "just as hard." Silicon carbide—familiar carborundum—and fused alumina are the next ranking abrasive materials, said Dr. Tone, which are available and widely used in commercial quantities. But there are other new abrasives which appear to be superior to silicon carbide. Boron carbide is one which can be bonded with silicon carbide to form a superior cutting stone.

A basic handicap to the development of the very hard cutting materials has been the inability of scientists to study their structure effectively.

The new thermal microscope, which Dr. Tone described, is one new tool which makes possible more knowledge about these hardest of synthetic man-made materials. Motion picture attachments are now used with the thermal microscope so that a continuous, permanent record can be made of the formation of such material as crystalline silicon carbide at temperatures over 3,632 degrees Fahrenheit, or 2,000 degrees Centigrade.

Dr. Tone is the father of Franchot Tone, well-known motion picture actor.

Science News Letter, January 15, 1938

PHYSICS

Mass of New X-Particles May Have a Wide Range

T HE MASS of the new-found "X" particle which scientists have been discovering in cosmic ray research may not have a fixed value, says Dr. Seth H. Neddermeyer of the California Institute of Technology. (*Physical Review*, Jan. 1).

Dr. Neddermeyer is a colleague of Dr. Carl Anderson and worked with him when the latter made the discovery of the positron for which he received the Nobel Prize award. The team of Anderson and Neddermeyer, too, made the initial discoveries of the "X" particle, whose mass appears to be intermediate between that of the electron and the proton.

"There are . . . reasons for believing that the mass (of the X particle) may not be unique and that many masses, ranging from a few times the electron mass up to very large values, may exist," says Dr. Neddermeyer's report, in part.

By theory, explains Dr. Neddermeyer, photons of radiant energy create pairs of particles—positive and negative in electrical sign—in their rush through the atmosphere on their way to earth. The energy and mass possessed by these new particles, that are the offspring of dying photons, are variable, postulates Dr. Neddermeyer. Thus many different masses might be observed, depending on the energy possessed by the original photon that creates them.

The point is that particles can have two kinds of mass; the so-called rest mass and a mass due to motion. Theoretically, at least, a particle moving with the speed of light should have an infinitely large mass.

The second kind of mass, which varies with the speed of the particle, was observed in the present experiments.

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BOTANY

Marihuana Weed Grows Where Rope Factory Failed

G OOD seed can sometimes bring forth evil fruit.

Years ago, enterprising business men in Omaha promoted an American rope-making industry based on hemp grown at home, by American farmers. The rich bottom lands of the Missouri promised to be ideal for the hemp fields, and Omaha is a good railroad shipping point. A praiseworthy project, surely, to put cash in the pockets of many people in the community.

Seed was imported, factories built, and the work started. But as it sometimes goes in the economic world, the industry failed to thrive. Hard times, unexpected factors interfering with either growth of the hemp or its processing—it's all past history now. The businessmen pocketed their losses, the farmers went back to raising corn.

Yet all was not as it had been. The hemp plant liked the soil and the climate all right, and hemp still grows in great masses in the neighborhood of Omaha as a wild weed. It is a tall, rank-growing

plant, able to compete even with giant ragweed for its place in the sun.

And in the Omaha neighborhood at least, it competes with ragweed in another even eviller way. C. C. Durham, chief botanist of the Abbott Laboratories, North Chicago, in his annual survey of the distribution of hayfever pollens, states that hemp pollen is at least twenty times as abundant in air samples taken over Omaha as in any of the other hundred-odd cities where such studies are carried on.

Even worse: hemp is the raw material for the narcotic drug all too widely used by American young people as marihuana, known also by the nickname "reefers." Mr. Durham expresses wonder and some indignation that the federal government, for all its high-pressure drive against marihuana traffic, has done nothing to eliminate the weed that is its ultimate source.

Marihuana, to be sure, is not made exclusively from chance-sown wild hemp, which grows as a weed in many other

parts of the country, though nowhere so abundantly as it does in the Omaha region. Hemp is also cultivated in hidden illicit patches—it has even been found being nursed in city window

boxes. But a concerted drive next spring, with CCC men or relief workers to scythe it down, would undoubtedly help to reduce materially the available hemp supplies in this country.

Science News Letter, January 15, 1938

AVIATION

Future of Aviation Progress Lies in Invisible Film of Air

Laminar Boundary Layer, Only Few Hundredths of Inch, Is Key to Perfection of Streamlining of Modern Plane

THE FUTURE of aviation is linked with an invisible film of air only a few hundredths of an inch thick. So nearly perfect is the streamlining of modern airplanes that even the protruding heads of tiny rivets can cut miles an hour from the speed of a plane and greatly lower its flight performance.

The crucial air film is known as the laminar boundary layer between the wing of a plane and the air through which it flies. If the air passes smoothly over the wing all is well. If the air becomes turbulent air resistance is increased and speed and climbing ability are decreased.

Great advances in knowledge of the behavior of this invisible air boundary have been made possible by studies in wind tunnels. But now it is becoming apparent that the day may be approaching when wind tunnel tests, alone, will not be the last word in aeronautical research.

Speaking at the first Wright Brothers' Lecture of the Institute of the Aeronautical Sciences, the British air expert, Prof. B. Melville Jones of Cambridge University, pointed out that free flight study of real airplanes may soon supply the final check on research.

Flight in smooth air, free from small-scale turbulence is needed, he indicated, to disclose some of the parasitic air friction losses now being studied. A slight unsteadiness may persist in wind tunnels which produces effects differing from those of actual flight.

Key point of investigations is a study of the so-called transition point where the smooth, laminar flow of air turns into the turbulent pattern that robs planes of their performance. The transition point should occur as far back on the wing, away from the leading edge, as is possible. In free flight tests, Prof.

Jones disclosed, a thin layer of tinfoil only one five-hundredth of an inch thick was sufficient to shift the transition point forward and produce drag.

In another test the almost imperceptible film of mist on a plane's wing, after flying through a cloud, produced the same kind of increased drag.

Wind tunnels are not doomed as a tool of aeronautical research, Prof. Jones indicated to his distinguished audience that included Orville Wright who flew the first airplane. Rather the advances of wind tunnel tests are supplemented by actual flights.

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ENGINEERING

Radio Control of Models Offers Hams New Field

THE much-pushed-around radio amateurs who have continually "worked" the unexploited portions of the radio spectrum of wavelengths, and then found themselves pushed out as soon as commercial possibilities came into being, now have a new field of activity. It is remote-control by radio of small model airplanes.

Model airplanes, both sailplanes and craft powered with gasoline engines, have become increasingly popular throughout the nation because of their performance in distance, speed and altitude. And with some of them now 13 feet in wingspan, they are not so tiny either.

The increasing numbers of such powered models around airports has now led to a legislative ban on their uncontrolled use despite cries from the model plane enthusiasts. And in answer to those cries has come a response from the radio "hams." The solution is radio robot control of model airplanes so that they come outside the "uncontrolled" phrase in the laws.

Two Hartford radio amateurs, Ross A. Hull and R. B. Bourne, describe in the technical radio (*Turn to Page 47*)



RADIO CONTROLS MODEL PLANE

This model plane's rudder is controlled by radio controls devised by two Hartford, Conn., amateur radio operators. A model sailplane, the ship is as yet controlled only in part by the radio signals. It is the latest field to be entered by the "ham" operators, who have pioneered radio developments in dozens of ways.

VOLCANOLOGY

54 of Japan's Volcanoes Active or Recently Extinct

FIFTY-FOUR of the 192 volcanoes in Japan, one of the most mountainous and geologically restless countries in the world, are active or only recently extinct, Williard Price, an American who has resided many years in the Land of the Rising Sun, reports. (*Natural History*, January).

Surveying the islands, Mr. Price finds that geological changes that elsewhere require many thousands of years take place in Japan in a relatively short period of time.

With 85 per cent. of her land mountainous, and with a heavy rainfall, devastating floods are a major problem, he writes.

"Japan outstrips Italy, her nearest competitor, in number and violence of earthquakes. During the ten years following 1923 there were 21,845 quakes strong enough to be felt—besides tens of thousands detected only by the seismograph. The death toll is heavy."

The extreme frequency of earthquakes in Japan results largely from two circumstances, he finds: "The volcanic nature of the islands and the abruptly sloping eastern coast which drops into one of the deep spots of the Pacific, Tuscarora Deep, almost five miles below the surface."

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PSYCHOLOGY

Personality Types Have Distinguishing Brain Waves

DISCOVERY that electric waves originating in the human brain could be tapped and made visible on a screen for study was an accomplishment of pure science. Yet already many experiments in practical applications of the discovery are yielding profitable results.

One series of experiments indicates that epilepsy may be diagnosed in unsuspected cases. Another may lead to a cure for that disease. Another is disclosing new knowledge about the process of learning; still another is revealing facts about sleep, linking it with certain states of mental illness.

New research at the University of Iowa promises to throw additional light upon the puzzling problem of personality.

In the past, psychiatrists have observed that the go-getter type of personality, the good mixer, the person in-

terested in facts and persons external to himself is one who, if he should become mentally ill, is more likely to have the manic-depressive type of mental disease.

Another kind of person, withdrawn, retiring, thoughtful, interested in his own thoughts and emotions rather than in facts and persons about him, is the one who might develop split personality or dementia praecox.

The brain waves distinguish between these two types in normal individuals, Dr. Abraham Ber Gottlob, of the University of Iowa, says in reporting his research to the *Journal of Experimental Psychology*.

The distinction is in the activity of the brain waves—in the percentage of the time during which the waves of the type known to scientists as "alpha" waves are being broadcast by the brain.

In this experiment, the subjects were divided into two groups. In the first group were those whose alpha waves were going out from 50 to 100 per cent of the time. In the second group were those broadcasting less than half the time.

If you are of the go-getter or extrovert type, Dr. Gottlob found, it is more likely that you will be in the first group with alpha waves being generated most of the time.

Science News Letter, January 15, 1938

ENTOMOLOGY

No New Japanese Beetle Quarantines For 1938

NO NEW Federal plant quarantines against the Japanese beetle insect pest will be necessary in 1938, Lee A. Strong, chief of the Bureau of Entomology and Plant Quarantine of the Department of Agriculture, has announced.

Results of 1937 scouting, it was indicated, show that the situation can be controlled by local extension of quarantines now in force. The annual hearing to consider extension of the regulated area or modification of the regulations will be omitted.

Decreases in the number of beetles trapped were reported this year from four points where beetles had given cause for alarm. Only one Japanese beetle was trapped at St. Louis, Mo., all year despite intensive activity. Indianapolis, Detroit and Chicago catches were also markedly reduced. Systematic trapping activities by the Department indicate where the beetles are and where trouble may be expected.

Science News Letter, January 15, 1938

IN SCIENCE

PALEONTOLOGY

Extinct Mammoth Was Nearly 18 Feet in Length

TUSKS scattered on the frozen shore of Siberia opposite Alaska may mean that Soviet scientists will some day add more complete specimens of the extinct hairy mammoth to the two bodies already found, Tass, Soviet news agency, reported.

Detailed information on the body, the second one to be found, reached Moscow. It revealed that this hairy mammoth, as it existed thousands of years ago, was in the neighborhood of 18 feet long, had a trunk more than nine feet long and hair more than three inches long.

Like the first specimen found, the second body, which was uncovered last October, was partially damaged by wild animals. The head, one leg and a part of the trunk have been partly eaten away. Otherwise the body is intact, preserved through the ages in the frozen earth of the north, as effective an ice box as man has devised.

The tusks of the specimen found have not yet been located, but they may be under its body, which has not yet been removed from the pebbly ground. Next spring, when the sea in this area is clear of ice, soundings of the coastal zone will be taken to see if a ship can approach the shore to take on board the find.

Science News Letter, January 15, 1938

PLANT PHYSIOLOGY

Dr. William Crocker Given American Institute Medal

THE 1938 gold medal of the American Institute has been awarded to Dr. William Crocker, director of the Boyce Thompson Institute for Plant Research, Yonkers, N. Y., and will be presented at a dinner to be held in February.

In announcing the award, the Institute cited Dr. Crocker "for his contributions to knowledge of life processes in plants and for his unique leadership in the organization of plant research." Dr. Crocker has been director of the Boyce Thompson Institute since its foundation in 1921.

Science News Letter, January 15, 1938

ICE FIELDS

SEISMOLOGY

Storm of Earthquakes Marks Turn of Year

THE OLD YEAR went out in a storm of earthquakes off the Pacific coast of Mexico. Two farewell shakes, on Dec. 30 and 31 respectively, brought the total for the year's last week up to six. They were both at or near the site of the big earthquake of Dec. 23, which caused destruction in far-away Mexico City. Approximate epicenter location for both quakes was given as latitude 15 degrees north, longitude 98 degrees west. The first shock occurred at 12:41.2 p. m., E.S.T., on Dec. 30, and the second at 6:25.2 a. m., E.S.T., on Dec. 31.

In addition to the series of Mexican earthquakes, the year-end seismic disturbances included one quake in mid-Atlantic, near the St. Paul Rocks, on Dec. 28, and one in Peru on Dec. 24.

The New Year's first major earthquake, on Jan. 2, belonged to the same "family" that had been rocking Mexico. It happened at 5:27.2 p. m., E.S.T. The epicenter was in latitude 15.7 degrees north, longitude 98 degrees west. It was a strong shock.

Reporting observatories were: University of Montana, Bozeman, Mont.; Williams College, Williamstown, Mass.; the Manila Observatory, Manila, P. I.; the stations of the Jesuit Seismological Association at St. Louis University, Georgetown University, Fordham University, Canisius College, and Weston College, and the stations of the U. S. Coast and Geodetic Survey at Ukiah, Calif., Tucson, Ariz., and Washington, D. C.

Science News Letter, January 15, 1938

PUBLIC HEALTH

Mysterious Epidemic Cause Of Recent Infant Deaths

THE MYSTERIOUS diarrheal malady that has afflicted infants in Chicago hospitals is not limited to that city. Epidemics of the same sort and probably the same disease have occurred in many cities in this country and abroad, Drs. Samuel Frant and Harold Abramson of the New York City Health Department

report. (*American Journal of Public Health*, January).

The malady has been responsible for a steady increase in mortality among new-born babies in recent years, they declare. This increase in babies' deaths is to be found chiefly among infants one month old or less.

The malady is epidemic diarrhea of the new-born. It is not related to the summer diarrhea which took such frightful toll of babies a generation ago. This new malady afflicts infants born in hospitals, and strikes during the first three or four weeks of life. No cause has yet been found for the disease. It has been reported in Seattle, Toronto, Memphis, New York, Chicago, Rochester, N. Y., Buffalo, Teaneck, N. J., Cincinnati, Cleveland, Edinburgh, Scotland, and Garches, France. In New York there have been, 23 such outbreaks in the past three years, affecting 711 infants, of whom 335 died.

The only known way of fighting the disease at present is to break the chain of infection from one infant to another in hospital nurseries. Usual methods of safeguarding infants in hospital nurseries have apparently not been sufficient to prevent the spread of this disease once it starts, and consequently Drs. Frant and Abramson recommend certain new methods to doctors and hospital authorities.

Science News Letter, January 15, 1938

PHYSICS

Harvard Scientists Devise Test For Large Vacuum Tube

THE FIRST satisfactory method of testing the intricate operation of large power vacuum tubes, used in radio broadcasting and in a myriad other scientific and industrial fields, has been announced at the Cruft Laboratory of Communication Engineering at Harvard University.

Thousands of dollars will be saved annually through more efficient operation of these vital scientific tools as a result of this advance, achieved through ten years of research by E. Leon Chaffee, Gordon McKay professor of physics and communication engineering.

Prof. Chaffee's testing technique, based on scientific and mathematical analysis will enable engineers to conduct tests by correlating mathematical analysis and routine laboratory tests. The new method replaces the crude and expensive trial and error procedure now in universal use and is expected to open the way to more efficient application of the tubes.

Science News Letter, January 15, 1938

MEDICINE—PSYCHOLOGY

Migraine Headache Called Perpetual Emotional Drunk

A PERSON with migraine headache is on a perpetual emotional drunk, Dr. Milton B. Jensen, consulting psychologist of Louisville, Ky., reported to the recent meeting of the American Association for the Advancement of Science at Indianapolis.

Simple habits of becoming extremely excited over everything or nothing were blamed by Dr. Jensen with this puzzling and painful type of headache without organic cause. In his (or her) emotional sprees, the individual tenses his muscles so that he produces a partial anemia in the brain by reducing the circulation of the blood. The headache results from a stretching of the blood vessels in the brain.

Sex cannot be blamed for migraine, Dr. Jensen declared.

"Sexual maladjustment bears no causal relationship to the onset, duration, frequency, or severity of ordinary migraine headaches," he said. "Maladjustment to sex does not cause the headaches and the headaches do not cause sexual maladjustment."

Too much excitement in the home during childhood, improper rest and acquired habits of incessant nervous excitation were held responsible. Dr. Jensen cited cases where the headaches cleared up when the sufferers learned to control their emotional responses.

Science News Letter, January 15, 1938

ORNITHOLOGY

Long Migration Flights Exhausting To Birds

BIRDS of our summer, now feasting in the sunlit woods beyond the Equator, often have an exceedingly difficult time in the long over-water flight between North and South America, declares Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution, just back from an extended ornithological trip in Venezuela.

We are so given to marvelling over the performances of migrating birds, says Dr. Wetmore, that we shut our eyes to the real facts. Many species arrive in a state of utter exhaustion, as if they had hardly been able to keep a-wing over the last long mile of inhospitable sea. They are glad enough to find food, and branches to perch on, before they resume their southbound flight.

Science News Letter, January 15, 1938

MEDICINE

Free As Water

Blood, When Needed for Transfusions, Is Sometimes Costly and Hard to Find, But Not Under New Plan

By CHARLES DILLON

CRASH! Screams! Another auto wreck.

Police sirens—then an ambulance. The bleeding victim is rushed to an emergency hospital. Internes with quick fingers press shut the gushing arteries, peer at the ominously white face of the unfortunate. One of the stern young men in white speaks crisply to a nurse.

"Type his blood and get a donor. Hurry."

The nurse runs to execute the command. The patient is a good looking lad of 17; reminds her of her brother. She has seen them lying there on that table so often. She knows that there isn't a chance in a million that the hospital can find a blood donor with the right type of blood in time.

Frantic Calls

The girl at the switchboard begins frantic calls. The list of donors is not long, and she can go through it in 30 minutes. The laboratory has told her to find a "Type One." Plenty of "Type Two" and "Type Four" answer the phone today. The nurse is on another line attempting to reach relatives of the dying youth. But they live in the country. It would take them two hours to drive in through the Sunday traffic. And they wouldn't do either, probably. The telephone operator sighs. Not a single

"Type One" at home. And that sigh was a requiem for the lad upstairs who had just breathed his last. Anti-climactically it may be added, that if "Type One" had been available, likely as not he would have charged between \$35 and \$50 for each pint of death-cheating fluid "given."

For, notwithstanding front page stories about generous policemen and firemen, donors of blood for transfusions are not usually humanitarians. They're professionals in business for the money. It's a business without much competition. After you have had the big vein in your arm punctured two or three times, and have watched your blood being drawn off into a jar, even the \$50 doesn't seem sufficient compensation. It's not at all pleasant—if you are thinking about yourself and the check.

There is another point of view, however. The slant of gladly giving a part of your life to save somebody else's life, and doing it with a spiritual lift. A lot of people would feel that way. But who are they? Where can the surgeons find them? They'd save among others, more than 1,000 mothers a year who die from childbirth bleeding.

They Can Be Found

Well, they *can* be found, in large numbers. As many as 600 in a town of 60,000. This has been proved recently in the city of Augusta, Ga. There, for the first time in the United States, a Red

Cross unit has undertaken to make blood as free as water for the injured and dying.

Our lad of 17 would not have perished in Augusta's University of Georgia Hospital. Lots of "Type Ones" would have been ready to serve. If it were day time, the local Red Cross Chapter's Motor Corps would have sped the donor to the doctors. If it were night, the police would have furnished an indomitable taxi—a squad car.

Will Sweep Nation

All Augusta knows about the blood transfusion service. The town is thrilled. There is an atmosphere of important achievement. Everybody feels it. Something has been started that will sweep the nation.

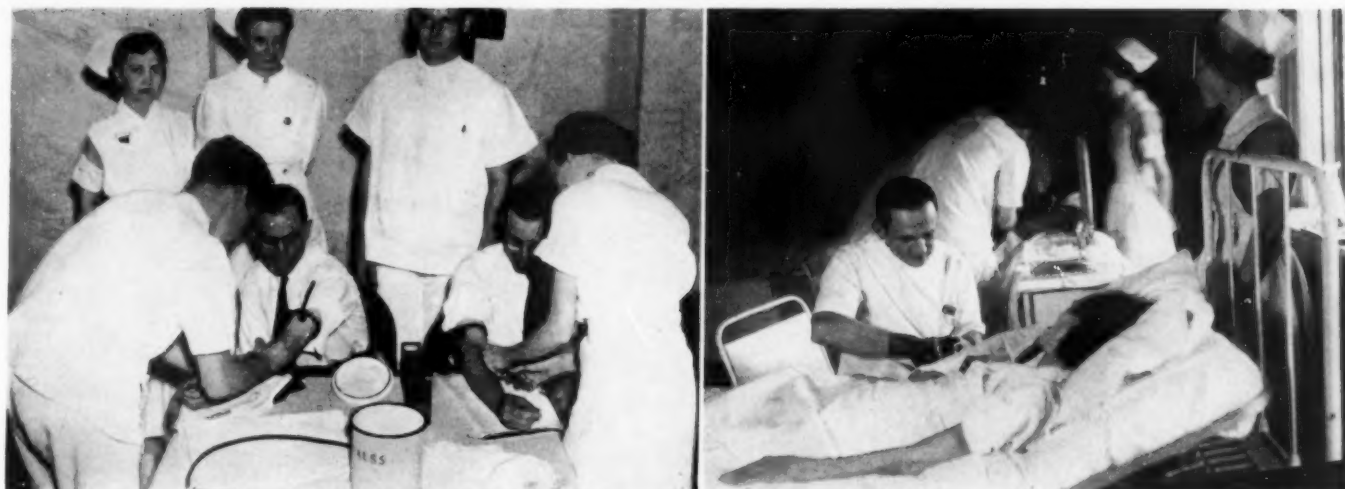
Already other communities are aroused. "They shall not die from lack of blood!" will soon ring from coast to coast—so the Augustans hope. Particularly, so hopes Dr. William De Kleine, Medical Director of the Red Cross in Washington, D. C.

But that's getting away ahead of a story that properly begins back in 1628. In that year, Harvey discovered the circulation of the blood. (Prior to that time the quaint theory obtained that sickness could be alleviated by drawing off blood

TESTS FIRST

Before a donor can give his blood to save another's life, he must have certain tests made, including the Wasserman test being conducted in the picture on the left. Next his blood is typed. (right).





—a service customarily performed by barbers!) On the basis of Harvey's findings, physicians soon realized the value of blood transfusions to replace blood loss caused by accident, operations or disease.

For many years, however, three obstacles prevented the successful practice of transfusion: infection occurring during the giving of the blood and its receipt by the patient, coagulation of the blood between extraction and injection, and the incompatibility of different kinds of blood.

The first difficulty was overcome by the researches in antiseptic methods of Pasteur and Lister; the second by adding a citrate of sodium; and the third by the discovery of the four blood types by Jansky and Moss between 1907 and 1910.

The first transfusion in which sodium citrate was used to cheat death took place in Buenos Aires in November, 1914. Curiously enough, according to a bulletin of the British Red Cross Society, "By this time most European countries were too busily engaged in war to permit of further experimentation!"

Army Helps

But in 1917, the American Army Medical Corps brought the possibilities of the sodium citrate method of avoiding coagulation to the attention of the Allied Armies' Medical Staff. As a result, transfusions became one of the Army surgeon's strongest weapons against the effects of wound bleeding and shock.

This war experience was deeply impressed upon Red Cross officials over the world, particularly in England, the Netherlands, Norway, Spain, Belgium and Japan. In 1921, the Camberwell Division of the British Red Cross Society

under the leadership of P. L. Oliver, made a modest start on a voluntary transfusion service for regular hospital patients.

By 1925, the demand for donors had grown to such proportions that the parent Society had to take over the work. It was the poor, of course, who were helped—who could not afford to pay the high prices of the professional donors. In 1934 the British service answered 3,000 calls.

Meanwhile in the United States, pellagra-fighting William De Kleine, M. D., Red Cross friend of Paul de Kruif, took stock of the mounting auto accident death toll, scanned the childbirth mortality figures, investigated American blood transfusion practices, and decided to look into the British system thoroughly. Too many people in this country were dying because their arteries could not be reprimed in time.

Draws Up Plan

De Kleine completed his London studies in 1936. Back in Washington, D. C., in his office in the marble memorial to the heroic women of the Civil War, which is Red Cross National Headquarters, the doctor drew up a plan for local Red Cross Chapters to follow, wherever and whenever it would be possible to make a trial. Encouraging to American experiment was the program of the Blood Transfusion Betterment Association of New York, which, while it listed and supplied only paid donors, was a non-profit organization interested in research and the improvement of technique.

Scarcely had Dr. De Kleine's secretary delivered the freshly typed plan to his desk, when in walked Pat H. Rice, Jr., Chairman of the Augusta Red Cross

GIVING AND RECEIVING

Cheerfully, men give of their blood so that unfortunate victims of illness or accident, such as the woman on the right, may live.

Chapter, and thus is the circle of the story once more complete.

Rice told the doctor that Augusta physicians sorely needed aid in finding blood donors for the fine, modern hospital of the University of Georgia. Dr. De Kleine smiled, picked up the plan from his desk. Mr. Rice read it; his eyes sparkled. Exactly the thing!

Press Aids

Shortly thereafter, Dr. De Kleine was in Augusta conferring with University medical men and local Red Cross people. Everybody put his shoulder to the wheel, and the plan moved swiftly into execution. Press, radio, club programs and church services were the means used by Rice and his associates in getting the project before the community.

Editorials in the papers and a mayor's proclamation attracted much attention. Leading doctors spoke on the air, explaining the process of transfusion, assuring listeners that donors suffered no ill effects, pleading the cause of humanity.

The Chapter secured a laboratory in the heart of Augusta's business district. Doctors and nurses from the hospital and Health Department were in attendance. In came the stream of volunteers who wanted to give their blood free. First to enroll was a woman whose own life a transfusion had saved. Within a few days 600 had had their blood tested and "typed." All, of course, were given physical examinations, including Wasserman tests.

A simple record system is kept in duplicate by the Chapter and the hospital. There is an alphabetical list of donors with necessary information, especially the blood type. Another file lists donors by the four types. When a transfusion is completed, a note is made on the card, and it is filed separately so that the donor will not be called for another three months.

Quite by chance, the first donor called was Chairman Rice himself. His blood renewed the spark of life in a woman suffering from puerperal fever.

Once again at his desk, with reports of life saving success steadily coming from Augusta, Dr. De Kleine writes careful instructions to Chapters elsewhere that are interested, that have heard the news through Red Cross channels. He predicts that one day an army of Red Cross blood volunteers may serve throughout the nation.

If he is right, thousands of persons now marked for death, will live. No longer will blood loss or weakness be tragic in accidents, puerperal fever, childbirth, anemia, peritonitis and some 60 other dangerous conditions. No more will there be a mad scramble to locate donors with the desired type of blood. No more will heavy fees be paid by the poor to save their lives.

Blood will be free as water!

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Science News Letter, January 15, 1938

ENTOMOLOGY

This Unpleasant Widow Is Still an Old Maid

THIS story of a Black Widow spider who proved to be a most determined old maid is told by Prof. John M. Pierson, Jr., of Oregon State College. He has kept a virgin Black Widow in a laboratory cage for over two years.

A year ago he tried to give her a mate, but she was more than cold to the male spider's advances. In fact, she bit her hopeful suitor twice. He recovered. Prof. Pierson tried again, several times, to play the part of matchmaker for his spinsterish spider. But every time the poor twice-bitten male was put into her cage the Black Widow went on the warpath.

So she's an old maid still.

Science News Letter, January 15, 1938

A new kind of paper for photographic prints is said to be really durable, neither turning yellow nor becoming brittle.

BIOLOGY

Hormones Aid in Treating Burns; Throw Light on Cancer

Many Kinds of Injured Cells, Both Plant and Animal, Yield Substances Not Yet Understood by Chemists

FURTHER advance in the knowledge of cancer and its eventual subjugation, a potent aid in the treatment of severe burns, and better understanding of the nature of life and cell growth, are all bound up in the discovery of substances produced by injured cells which cause the rapid multiplication of healthy cells.

These substances, provisionally named intercellular hormones; were demonstrated recently to the American Association for the Advancement of Science, by Dr. John R. Loofbourow of the Institutum Divi Thomae.

For the past year, they have been used at St. Mary's Hospital, Cincinnati, in the treatment of third degree burns. Burns thus treated heal up in a minimum of time and without the wide areas of disfiguring scar tissue that usually follow such injuries.

The steps in the demonstration were simple, direct, and complete. Under one microscope were cells of yeast, with other cells of yeast, uninjured, separated from them by a layer of jelly-like material, agar-agar. Nothing especial was happening in this culture.

Under the next microscope was a similar mounting of yeast cells, with the important exception that the lower cells had been injured by prolonged exposure to strong ultraviolet radiation. Here, something emanated from the injured cells, passed through the separating layer, and stimulated the healthy cells into exceedingly rapid multiplication.

A third microscope showed yeast cells in a similar state of rapid proliferation. These, however, had not been treated directly with injured cells, but with an extract taken from such cells. In a tiny tube nearby were a few yellowish crystals, laboriously purified out of injured-cell extract.

Dr. Loofbourow stated that these crystals have not yet been analyzed. Preliminary steps in analysis indicate that they consist of the higher chemical fractions of proteins. But that does not tell much as yet, even to chemists.

Many kinds of injured cells, both plant and animal, have been shown to be

capable of yielding the new intercellular hormones. They cause rapid growth or proliferation of a wide variety of uninjured cells. Of especial interest, from the practical point of view, is the stimulation of two kinds, fibroblasts and epithelial cells.

Fibroblasts are cells typical of one kind of cancer; and when you say cancer, everybody pricks up his ears. The least step in the advance of understanding why the accursed things grow, the least hope that means may be found of checking that growth, are reasons for very legitimate excitement.

Epithelial cells constitute an important part of the complex we know as the skin, as well as the covering of other, internal body surfaces. The ability of the new-found substances to make these grow and spread rapidly has already been turned to account in the treatment of burns.

Science News Letter, January 15, 1938

BOTANY

Cold Essential To Growth Of Northern Wild Flowers

WILDFLOWERS to star next spring's northern woods are now deep-blanketed under snow. They are not, however, shunning all the cold. Indeed, it is necessary for spring beauties, dogtooth violets, trilliums, bloodroot, and a number of other wildflowers to take a thorough chilling now, or they would not come up at all to blossom in May.

Prof. Herman Kurz of the Florida State College for Women has demonstrated, in experiments with 20 kinds of northern wildflowers, that their rootstocks or other underground parts must be held at a temperature near or below freezing for several weeks if normal growth and flowering is to take place in the spring. His report will be published in the *Proceedings of the Florida Academy of Sciences*.

It all started when Prof. Kurz decided he'd like some northern wildflowers in his garden. The ones he had sent him, left out through the mild winter of



AWAKENED BY CHILLING

The trillium plant in the pot on the left was cold-treated and developed normally; the untreated plant in the pot on the right remained stubbornly dormant.

northern Florida, didn't do at all well.

Prof. Kurz knew, of course, the traditional belief of gardeners that certain plants had to be nearly frozen every winter to make them grow well. He knew also of earlier experiments showing the beneficial effects of chilling on woody plants and on seeds, especially the researches of the late Dr. F. V. Coville.

He therefore decided to make some really critical tests with non-woody plants. He got 20 different kinds of wildflowers from the north. He set rootstocks or bulbs of each kind in twin pots. One pot of each pair he left outdoors, the other pot he put into near-freezing temperature in a cold storage plant.

In the spring he set the pairs of pots together again. The great majority of his species showed good growth and early flowering in the pots that had been chilled, little or no growth and late or no flowering in the unchilled pots. A few species of plants, that grow in Florida as well as in the North, showed no clean-cut differences between chilling and non-chilling.

One group of four species, May apple, bloodroot, wild phlox, and Turk's-cap lily, showed very peculiar behavior. Plants that came from New England had to be chilled. Plants of the identical species that grow in Florida would grow without being chilled.

Prof. Kurz makes the suggestion that by long custom the northern forms

have come to require freezing and by the same token the southern forms have developed an indifference to or no requirement for freezing. Such forms may be termed physiological or ecological species, he says.

Prof. Kurz points out, in conclusion, that just as there are many southern flowers and other plants that find northern winters too severe, so also there appear to be numerous wildflowers of the north that cannot establish themselves in the south because the winters there are not severe enough to stimulate them to normal growth and reproduction.

Science News Letter, January 15, 1938

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REDUCTION IN PRICE

CHANGE IN ISSUE

for the

JOURNAL OF MORPHOLOGY

Beginning January 1, 1938, the Journal of Morphology, heretofore a quarterly, will be issued bimonthly, on the first of January, March, May, July, September, November.

A volume will contain 600 pages, as formerly, and will be issued in three numbers. The volumes will be published annually.

The price is reduced from \$12.00 per volume to \$10.00 per volume, Domestic; \$10.50 per volume, Foreign.

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This change has been made to meet the demands of the ever increasing number of accepted manuscripts, and to assure prompt publication.

Volume 62, no. 1 issued January 1, 1938.

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PSYCHOLOGY—BIOLOGY—HISTORY

I.Q. Is What Surroundings And Experience Make It

Scientists Also Learn That Wheat Offspring Can Be Predicted and Made to Order; War Gas for Insects

A CHILD of average intelligence today may grow up to be a genius or feeble minded, Prof. Beth L. Wellman of the Iowa Child Welfare Research Station told the meeting of the American Association for the Advancement of Science.

She finds a child's mental future depends upon his environment.

An entire revision of previous concepts of intelligence to conform with newly discovered facts is demanded by Prof. Wellman. Your IQ is not a fixed incapable fact with which you come into the world. It can be increased or decreased according to your surroundings.

"An individual who functions at a high level is one who keeps himself in trim by exercise and training in mental areas," said Prof. Wellman.

The mental surroundings of a child should be favorable for intellectual growth, she said, and his environment must change progressively as he grows older in order to be as stimulating to him mentally at one age as another.

Scientists of the future may look upon the human race of today as intellectually undernourished, Prof. Wellman prophesied. She sees no reason for not encouraging extreme upward changes in the intelligence of children.

"They are beneficial to the child and to society," she said.

Man was just as easy to fool some

five hundred years ago as he is now, Dr. George Sarton, editor of *Isis* and historian of science, has concluded from a study of "most popular authors" and "best sellers" among earliest printed books, incunabula or books printed before 1501.

The great majority of contemporary authors whose writings were printed in those days were unknown and mediocre, Dr. Sarton told the History of Science Society.

The history of the transmission of knowledge is just as important as the history of its discovery, Dr. Sarton declared. For this reason, conducting his researches as a Carnegie Institution associate in the Harvard Library, he is now giving special attention to the critical period in the diffusion of knowledge that was ushered in by the invention of printing.

War Against Insects

Chemical science has equipped man with a new weapon for use in his unending war of defense against insect hordes, Dr. Harold H. Shepard and Frank W. Fisk of the Minnesota University Farm, St. Paul, announced to the A.A.A.S.

The name of the compound is methyl bromide. It combines bromine, one of the earlier-ried of the war gases, with the radicle that makes wood alcohol the unsafe stuff it is for internal application.

● RADIO

January 20, 4:00 p. m., E.S.T.

HOW SAFE ARE YOUNG DRIVERS?—Dr. Harry M. Johnson, Highway Research Board.

January 27, 4:00 p. m., E.S.T.

WHAT'S NEW IN CHEMISTRY—Dr. Harrison E. Howe, editor of *Industrial and Engineering Chemistry*.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

Methyl bromide seems to be good for use against insect pests on a number of fronts. It can be used for seed disinfection, for it kills the bugs and does not harm the seed. It can be used for various kinds of fumigation, with effects comparable to those of hydrocyanic acid, yet it does not linger on, even as a bad smell. The presence of moisture seems to make it more effective.

Wheat Made to Order

Human parents would be highly pleased if they could tell ahead of time what their expected offspring was going to look like, or even whether it was to be boy or girl.

Plant breeders have them beaten four ways from the ace. Dr. Fred N. Briggs of the University of California told scientists that in 1939 a new variety of wheat will be born at the University experimental grounds at Davis, Calif. It should be in commercial production by 1943.

The new variety will be resistant to stem rust, smut, and Hessian fly. In addition, Dr. Briggs said, he and his colleagues know just what it will look like, how it will yield, where it will be adapted to grow, and how it will mill.

Now all they need to do is go ahead and combine, by the back-crossing method, the parent stocks possessing the qualities they want to produce.

They know they can do it, for they have already made other strains to order in the same way. They have produced three varieties resistant to smut and are now in process of producing seven more. Two varieties have been produced that are resistant to both stem rust and smut, and rust resistance is being added to two others.

Science News Letter, January 15, 1938

There are 19 million acres of land under irrigation in the West.

The British Columbia plover spends its winters in Hawaii, after flying 3,000 miles over the Pacific.

This Handy Coupon

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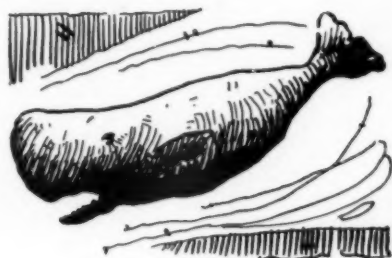
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The Reich Regulates!

GERMAN whaling ships have recently joined those of Norway, Great Britain, the United States and other nations on the seas. German economic policy is seeking new sources of the all-necessary fats and oils, to cut down the amount of imports now needed for food and technical purposes.

Concern was at first expressed by some conservationists, lest the new whalers ignore the principles of sound wildlife management and enter upon a ruthless campaign of get-all-you-can. Publication of the new whaling law of the Reich should go far to allay such anxiety. Indeed, if anything, the Germans would seem to be leaning over backwards in their efforts to preserve the living foundation of their industry.

"Protected" species, which it is forbidden to kill, include the following kinds of whales: whalebone whales, right whales, blue, gray, finback, humpback, and sperm whales. Minimum sizes are defined, and certain sea areas are permanently closed to whaling at all times.

Detailed records of all captures must be kept on the floating factories, as well as records of personnel and property. At the end of the voyage, full report must be made to the Reich authorities.

To make sure of the correctness of the whalers' conduct, every floating factory must carry at least one government-paid inspector. He enjoys prestige and authority equivalent to those of the ship's officers, and must be permitted to observe all activities and inspect all property.

Whaling operations of any kind by German citizens, even those living in a foreign country and under foreign jurisdiction, can be forbidden them un-

less they apply to their home authorities for permission. German citizens may also be forbidden to take part in any whaling operations conducted under foreign colors, unless such operations are subject to the same regulations as those prescribed in German law.

If whales can be protected by a bristling array of *verbots*, surely there should be sanctuary for them here!

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ENGINEERING

Radio Is Latest Aid in Battle Against Snow

See Front Cover

RADIO is the latest innovation in the battle between science and snow. Twenty fixed radio stations and 16 portable units are being operated by the Washington State Department of Highways at Olympia in the effort to keep winter traffic on the move.

Because plowing must be carried on in remote mountain regions where wire communication is unavailable or unreliable, all rotary plows have been equipped with two-way radio installations in order that they may keep in constant touch with the maintenance offices of the Highway Department, receiving instructions and broadcasting weather reports or calls for help. Shop clerks and plowmen are licensed radio operators.

The radio-equipped plow sends word of weather and road conditions at regular intervals, and the base stations, open every minute of the day and night, keep close check on the snow situation throughout the entire State.

Maps are kept to show the location of all snow-fighting apparatus and the progress of storms and removal operations. Trucks equipped with short-wave receiving sets pick up these reports and alter their scheduled runs accordingly, while the general motoring public is informed of snow conditions by regular broadcasting stations which relay messages from the plows.

Since modern winter warfare on the highways has come to be a matter of keeping ahead of the storm, radio communication makes possible rapid concentration of equipment where it is most needed.

Plows which were formerly stranded for days in deep mountain passes can now call for additional supplies and equipment, thus saving time and money and increasing their effectiveness. Dangerous snow slides reported to headquarters permit greater safety for winter

travelers, and many marooned motorists can be rescued by radio.

The radio-equipped plows are powerful Diesel trucks with four-wheel drives, having auger-type rotary units which hurl the snow into the air and back from the highway as far as 150 feet. In bad seasons they operate continually. A small truck travels back and forth from the plow, bringing Diesel oil, supplies, and transporting the operators.

In the illustration on the front cover of this week's SCIENCE NEWS LETTER, Washington's Diesel Snogo, Station KGHA, radios to headquarters that Snoqualmie Pass is open to traffic. Note the triangular antenna installed over the engine, back of the driver's cab, and the "wall comber" projecting ahead of the rotary equipment to knock down overhanging snow walls.

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magazine *QST* a control method of using a lightweight radio receiver aboard model airplanes. Hull is associate editor of *QST* while Bourne is employed by the Maxim Silencer Company at Hartford. Such controlled model planes would be useful for anti-aircraft target practice without risk to pilots.

So far control has only been achieved on the rudder of a 13-foot wingspan craft, but progress is being made on radio control of the elevators and ailerons of the craft.

The problems the amateurs have tackled are those which England has accomplished with her radio robot airplane which gave demonstrations last year. The details of operation of the large-sized British plane have never been announced because of military secrecy and wartime usefulness.

But Hull and Bourne's methods are no secret. Any enthusiastic radio amateur can build a similar controlling mechanism. And because all radio transmission must be in charge of a licensed radio operator it looks as though the radio "hams" and the airplane "hams" would form a permanent alliance.

Science News Letter, January 15, 1938

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Biochemistry

PERSPECTIVES IN BIOCHEMISTRY—Joseph Needham and David E. Green, eds.—*Cambridge (Macmillan)*, 361 p., \$4.75. A series of 31 essays presented to Sir Frederick Gowland Hopkins by his former pupils which include such names as Prof. J. B. S. Haldane, Nobelist Albert von Szent-Györgyi and Sir Edward Mellanby. The many outstanding authors summarize work in their fields and speculate on the future paths of thought and discovery. Physiology and zoology, embryology and genetics, medicine, bacteriology and nutrition are all topics discussed in this worthy tribute to a great scientist.

Science News Letter, January 15, 1938

Biochemistry

THE BIOCHEMISTRY OF CELLULOSE. THE POLYURONIDES LIGNIN ETC.—A. G. Norman—*Oxford Univ. Press*, 232 p., \$5. British volume summarizing the knowledge of the structure of cellulose and its related compounds.

Science News Letter, January 15, 1938

Physics

INTRODUCTION TO PHYSIOLOGICAL OPTICS—James P. C. Southall—*Oxford Univ. Press*, 426 p., \$5.50. From his lectures given at Columbia University over a long period, Prof. Southall offers this useful book for the intelligent layman; or rather for scientists in other fields who, after all, are laymen in this particular branch of science.

Science News Letter, January 15, 1938

Journalism

THE CHANGING AMERICAN NEWSPAPER—Herbert Brucker—*Columbia Univ. Press*, 111 p., \$1.50. Ideas on how the daily press can be made more readable and useful.

Science News Letter, January 15, 1938

Sociology

REVOLT AGAINST WAR—H. C. Engelbrecht—*Dodd, Mead*, 367 p., illus., \$2.50. A scholarly, documented and entertaining presentation of the movement against war, the way soldiers act, war's social consequences, costs, and causes, and the way to peace.

Science News Letter, January 15, 1938

Archaeology

HANDBOOK OF NORTHERN ARIZONA POTTERY WARES—Harold Sellers Colton and Lyndon Lane Hargrave—*Northern Arizona Society of Science and Art*, 267 p., illus., \$4. A valuable reference book for students of Southwestern pottery. It not only describes types and tells where

the type site occurs, but also explains methods of studying potsherds and identifying them.

Science News Letter, January 15, 1938

Agriculture

FOODS AMERICA GAVE THE WORLD—A. Hyatt Verrill—*Page*, 289 p., illus., \$3. New foods from the New World—corn, potatoes, tomatoes, tobacco, chocolate, vanilla, and a hundred others—have been told about many times in sober scientific style. Now a new author re-tells the tale making it as fascinating as a novel.

Science News Letter, January 15, 1938

Zoology

PETS AND FRIENDS—Emma A. Myers—*Heath*, 186 p., illus., 84 c. About dogs and kittens, and some other domestic animals, and a few wild ones, told for children of early school age.

Science News Letter, January 15, 1938

Archaeology

THE YOUNGE SITE: AN ARCHAEOLOGICAL RECORD FROM MICHIGAN—Emerson F. Greenman—*Univ. of Michigan Press*, 172 p., illus., \$2.25. Excavation of a site containing remains of two pre-Columbian groups. The site includes enclosures, burials, and a variety of stone and pottery objects.

Science News Letter, January 15, 1938

Mining

ALL ABOUT MINING—Wallace H. Witcombe—*Longmans*, 268 p., \$2.50. A comprehensive, popularly-written review of mining, from the early days through to the present, and from prospecting for the earth's riches to bringing them out of the ground, concluding with a brief look into the future.

Science News Letter, January 15, 1938

Photography

APPLIED PHOTOGRAMMETRY—Ralph O. Anderson—*Edwards*, 120 p., illus., \$2. A highly technical description of photographic mapping methods.

Science News Letter, January 15, 1938

Journalism

THE PROTECTION AND MARKETING OF LITERARY PROPERTY—Philip Wittenberg—*Julian Messner*, 395 p., \$3.75. First aid and good advice to those who write, publish, or deal with any literary commodity.

Science News Letter, January 15, 1938

Vocal Study

VOICE MANUAL—George A. Brouillet—*Bruce Humphries*, 67 p., \$1. Physical and vocal exercises for singers.

Science News Letter, January 15, 1938

Travel

FORBIDDEN JOURNEY: FROM PEKING TO KASHMIR—Ella K. Maillart—*Henry Holt*, 306 p., illus., \$3. Into the Turkestan, the author and Peter Fleming ventured in search of news and for the thrill of journeying in one of the least-known parts of the world. Isolated as it seems, this region was rumored to be entangled in factional battles among Chinese, Japanese, Moslems, Russians. Experiences of these journalists make a fascinating story.

Science News Letter, January 15, 1938

Psychology

TRIAL-AND-ERROR, GRADUAL ANALYSIS, AND SUDDEN REORGANIZATION: AN EXPERIMENTAL STUDY OF PROBLEM SOLVING—Helen E. Durkin—*Archives of Psychology*, 85 p., \$1.25.

Science News Letter, January 15, 1938

Natural History

WATCHING WILD LIFE—Phyllis Bond—*Longmans*, 180 p., illus., \$2.40. A book on English wildlife, written with unusual charm, and illustrated with 18 appropriate photographs.

Science News Letter, January 15, 1938

Science—Autobiography

BENJAMIN FRANKLIN'S OWN STORY—Nathan G. Goodman—*Univ. of Penn. Press*, 268 p., \$2.50. His unfinished autobiography with biographical material from his writings which extends the story of his life from 1759 to his death in 1790.

Science News Letter, January 15, 1938

Graphic Methods

HOW TO USE PICTORIAL STATISTICS—Rudolf Modley—*Harper*, 170 p., illus., \$3. How to use charts and diagrams of the neo-pictograph Neurath technique, written by a leading American exponent. The perfect review would be such a chart.

Science News Letter, January 15, 1938

Economics

MODERN BANKING—Rollin G. Thomas—*Prentice-Hall*, 474 p., \$3.80. A college text by the associate professor of economics at Purdue, that should be useful to those out of college.

Science News Letter, January 15, 1938

Microphotography

MICROPHOTOGRAPHY FOR LIBRARIES, 1937—M. Llewellyn Rancy—*American Library Association*, 89 p., \$2. Papers presented at the microphotography symposium at the New York meeting of the American Library Association.

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